



2016 Spring Netting (SNI) Summary Report

White Clay Lake

Shawano County (WBIC 326400)

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Introduction and Survey Objectives

In 2016, the Department of Natural Resources conducted a fyke netting survey of White Clay Lake in order to provide insight and direction for the future fisheries management of the water body. Primary sampling objectives of this survey are to characterize species composition, relative abundance, and size structure. The following report is a brief summary of the activities conducted, general status of fish populations and future management options.

Acres: 234 Shoreline Miles: 2.8 Maximum Depth (feet): 45
 Lake Type: Spring Public Access: 1Public Landing
 Regulations: 25 Panfish may be kept but only 10 of any one species, all other species statewide default regulations

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A copy of this report can be found online at:

<http://dnr.wi.gov/topic/fishing/reports/>

Survey Information

Site location	Survey Dates	Water Temp. (F)	Target Species	No. of Nets	Gear	Net Nights
White Clay Lake	03/26/2016 - 4/6/2016	39 - 42	Northern Pike, Walleye, Panfish	7	Fyke Net	69

Survey Method

- White Clay Lake was sampled according to spring netting (SNI) protocols as outlined in the statewide lake assessment protocol. The primary objective for this sampling period is to count and measure adult walleye and muskellunge. However, we also used this sampling period to target adult northern pike. Other gamefish may be sampled but are considered by-catch as part of this survey.
- Fyke Nets were deployed in areas of the lake that contained spawning habitat or were likely travel areas for northern pike, and walleye. All newly captured walleye and northern pike were given a partial fin clip (top caudal fin). A subsample of fish were weighed and age structures (spines and otoliths) were collected for age and growth analysis.
- Fish metrics used to describe fish populations include total abundance (mark and recapture population estimate for walleye and northern pike), proportional stock density, catch per effort, length frequency distribution and mean age at length.



Fish Metric Descriptions

Catch per unit effort (CPUE) is an index used to measure fish population relative abundance which simply refers to the number of fish captured per unit of distance or time. For netting surveys we typically quantify CPUE by the number and size of fish per net night. CPUE indexes are compared to statewide data by percentiles and within lake trends. For example, if a CPUE is in the 90th percentile, it is higher than 90% of the other CPUEs in the state.

Total abundance is a metric that describes population size and is estimated by mark and recapture. In our study, during spring netting, a portion of the northern pike population is captured, marked (with a partial fin clip), and released. During follow-up surveys, another portion is captured and the number of marked individuals within the sample is counted. A formula that uses the proportion of marked and unmarked fish is used to estimate the size of the population.

Proportional Stock Density (PSD) is an index used to describe the size structure of a fish population. It is calculated by dividing the number of quality size fish by the number of stock size fish for a given species. PSD values in the 30 to 50 percent range generally describe a balanced fish population. PSD indexes are compared to statewide data by percentile and to within lake trends.

Length frequency distribution (LFD) is a graphical representation of the percentage of fish captured by one inch size intervals. Smaller fish (or younger age classes) may not always be represented in the length frequency due to different habitat usage or sampling gear limitations.

Mean Age at Length is an index used to assess fish growth. Growth structures (otoliths, spines, or scales) are collected from a specified length bin of interest (e.g. 7.0-7.5 inches for bluegill). Mean age from all samples is compared to statewide data by percentile with growth characterized by the following benchmarks: slow (<33rd percentile); moderate (33rd to 66th percentile); and fast (>66th percentile).

Relative Abundance (Catch per Unit Effort)

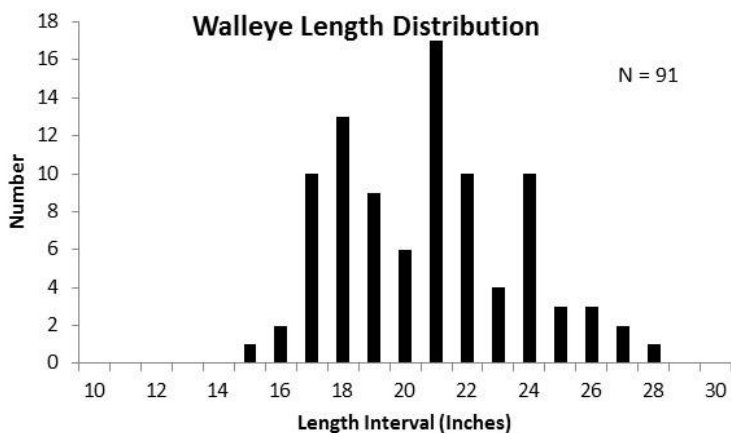
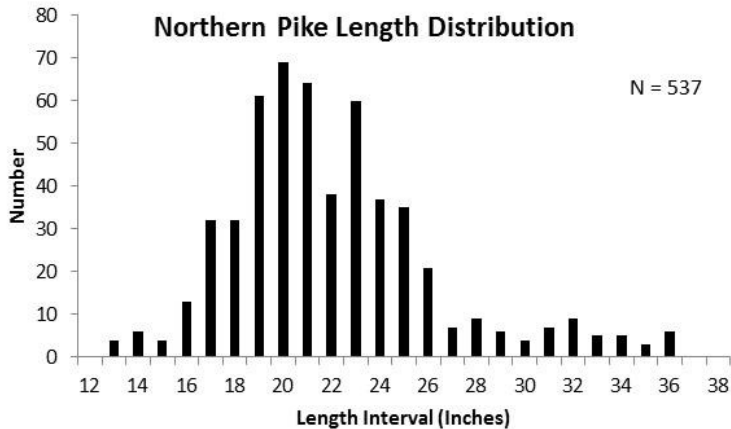
Species	Total No. Captured	CPUE (no per net night)			Statewide Percentile Rank	Abundance Rating
		Historical Median	2009	2016		
BLACK CRAPPIE	293	5.1	37.8	4.2	57th	Moderate
BLUEGILL	724	8.9	13.1	10.5	51st	Moderate
BOWFIN	9	0.1	0.1	0.1	-	-
BROWN BULLHEAD	45	0.1	0.6	0.7	-	-
COMMON CARP	5	0.2	0.3	0.1	-	-
LAKE CHUBSUCKER	3	0.2	0.3	0.0	-	-
LARGEMOUTH BASS	10	0.6	5.1	0.1	25th	Low
NORTHERN PIKE	537	7.8	13.3	7.8	89th	High
PUMPKINSEED	28	0.4	0.4	0.4	34th	Moderate
WALLEYE	91	2.5	4.0	1.3	35th	Moderate
YELLOW BULLHEAD	38	0.6	3.3	0.6	-	-
YELLOW PERCH	30	3.3	10.7	0.4	34th	Moderate

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Gamefish Summary

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Size Structure Metrics									
Species	Total	Average Length (Inches)	Length Range (Inches)	Stock and Quality Size (inches)	Stock No	Quality No	PSD	Percentile Rank	Size Rating
LARGEMOUTH BASS	10	15.9	13.6 - 18.5	8.0 and 12.0	-	-	-	-	-
NORTHERN PIKE	547	22.5	13.5 - 37.0	14.0 and 21.0	543	324	60%	69th	High
WALLEYE	91	21.2	15.5 - 28.5	10.0 and 15.0	91	91	100%	100th	High



Size Structure (PSD) Trends							
Species	Historical Median (1978-Present)	PSD by Year					
		1978	1983	1994	2000	2009	2016
LARGEMOUTH BASS	95%	94%	86%	97%	73%	97%	100%
NORTHERN PIKE	33%	30%	23%	23%	36%	47%	60%
WALLEYE	98%	100%	100%	96%	96%	92%	100%

Total Abundance (Mark and Recapture Population Estimate)						
Species	Number Marked (Netting)	Number Sampling Events (Netting)	No. Recaptures (Netting)	Schnabel Population Estimate (95%)	No per Acre	Abundance Rating
NORTHERN PIKE	518	11	140	1262 (1063 - 1552)	5.4	Moderate

Growth Metrics						
Species	Total (N)	Length Bins (inches)	Mean Age (Years)	Age Range (Years)	Percentile Rank	Growth Rating
LARGEMOUTH BASS	2	8.0	2	2	100th	Very Fast
LARGEMOUTH BASS	5	14.0	5	4 - 6	87th	Fast
WALLEYE	3	18.0	4.7	4 - 6	92nd	Very Fast
WALLEYE	3	21.0	9	8 - 10	30th	Slow

Gamefish Summary

Northern Pike

Relative abundance metrics were at high levels and size structure was at moderate-high levels when compared to statewide data. The largest northern pike captured was 37.0 inches. Relative abundance has decreased since the last survey, but was similar to the historical median. However, size structure has trended upwards with PSDs (% > 21.0 inches) increasing by 28% since the last survey and 82% higher than the historical median.

Largemouth Bass

Largemouth bass were found in low abundance. Size structure metrics indicated high quality size. Growth metrics for stock and quality sized bass indicated fast growth. A spring electrofishing survey was also completed which is the preferred gear to assess largemouth bass population metrics. A separate electrofishing report is also available. Electrofishing results also indicated abundance and size metrics were at high levels.

Walleye

Relative abundance metrics were at moderate levels and size structure was at a high level compared to statewide data. The largest walleye captured was 28.5 inches. Relative abundance has decreased since the last survey and was below the historical median. PSDs (% > 15 inches) has remained similar to past surveys.

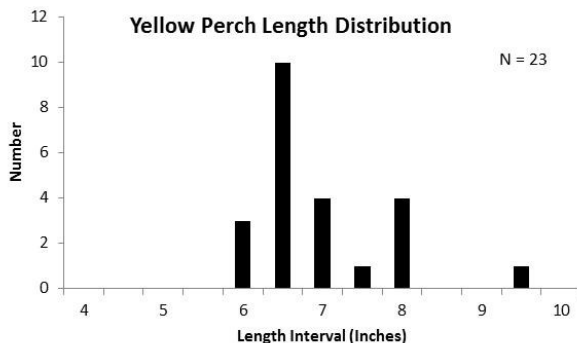
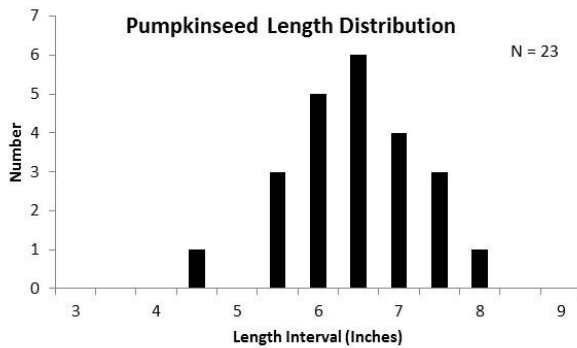
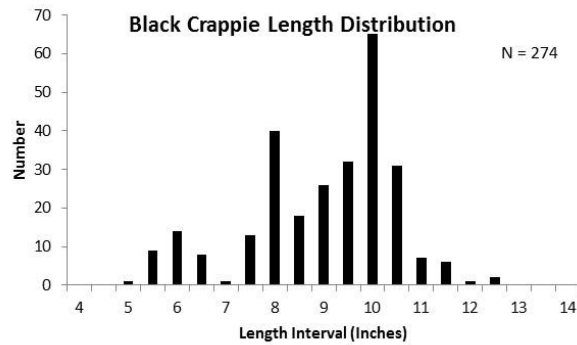
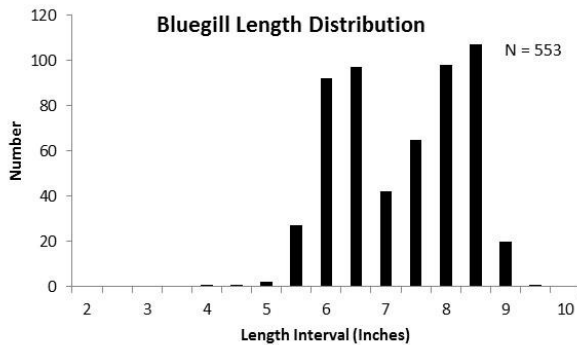


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Panfish Summary

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Size Structure Metrics									
Species	Total	Average Length (Inches)	Length Range (Inches)	Stock and Quality Size (inches)	Stock No	Quality No	PSD	Percentile Rank	Size Rating
BLUEGILL	553	7.4	4.1 - 9.6	3.0 and 6.0 inches	553	522	94%	92nd	High
BLACK CRAPPIE	274	9.2	5.4 - 12.5	5.0 and 8.0 inches	274	228	83%	74th	Moderate - High
PUMPKINSEED	23	6.6	4.6 - 8.0	3.0 and 8.0 inches	23	19	83%	89th	Moderate - High
YELLOW PERCH	23	7.2	6.2 - 9.9	5.0 and 8.0 inches	23	5	22%	57th	Moderate



Size Structure (PSD) Trends						
Species	Historical Median (1978-Present)	PSD by Year				
		1978	1983	1994	2009	2016
BLUEGILL	77%	77%	58%	78%	61%	94%
BLACK CRAPPIE	45%	45%	82%	14%	36%	83%
PUMPKINSEED	51%	35%	16%	-	67%	83%
YELLOW PERCH	19%	20%	5%	19%	16%	22%

Growth Metrics - 2016						
Species	Total	Length Bin	Mean Age	Age Range	Percentile Rank	Growth Rating
BLUEGILL	22	5.5 - 6.4	3	3 - 4	100th	Very Fast
BLUEGILL	18	6.5 - 7.4	3.3	3 - 5	99th	Very Fast
BLACK CRAPPIE	9	7.5 - 8.4	3	3	95th	Fast
BLACK CRAPPIE	15	9.5 - 10.4	4.9	4 - 5	71st	Fast

Panfish Summary

Bluegill

Bluegill relative abundance was found at moderate levels, while size structure metrics were at high levels when compared to statewide data. The largest bluegill captured was 9.6 inches. Relative abundance has decreased since the last survey, but remained higher than the historical median. Size structure had trended upwards with PSDs(>6.0 inches) increasing 54% since the last survey and 22% higher than the historical median. Growth metrics for quality and preferred sized bluegill indicated fast growth.

Black Crappie

Black crappie relative abundance was at a moderate level while size structure metrics were at a moderate to high level when compared to statewide data. The largest black crappie sampled was 12.5 inches. Relative abundance has decreased since the last survey, but remained close to the historical median. This phenomenon is often seen with black crappie populations and their ability to pull off large year classes at times. Size structure has trended upwards with PSDs (>8.0 inches) increasing 130% since the last survey and 84% higher than the historical median. Growth metrics for quality and preferred sized black crappie indicated fast growth.

Other panfish and preyfish

Yellow perch and pumpkinseed were also captured during fyke netting, but were found in low numbers. Other species to note from our survey were brown bullhead, yellow bullhead, common carp and lake chubsuckers.

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Management Options and other Information

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Stocking History

Species	Year	Age	Mean Length	Number Stocked
WALLEYE	2016	Large Fingerling	8.0	1999
WALLEYE	2014	Large Fingerling	7.0	1996
WALLEYE	2013	Large Fingerling	6.0	2497
WALLEYE	2012	Large Fingerling	8.0	1980
WALLEYE	2011	Large Fingerling	8.0	2000
WALLEYE	2010	Large Fingerling	7.0	1999
WALLEYE	2010	Small Fingerling	1.4	8170
WALLEYE	2009	Large Fingerling	6.9	1995
WALLEYE	2008	Large Fingerling	7.0	2000
WALLEYE	2008	Small Fingerling	1.5	7990
WALLEYE	2007	Large Fingerling	7.5	2000
WALLEYE	2006	Large Fingerling	7.0	2000
WALLEYE	2006	Small Fingerling	1.4	8185
WALLEYE	2005	Small Fingerling	-	2000
WALLEYE	2004	Small Fingerling	1.4	10985
WALLEYE	2000	Small Fingerling	1.7	11000
WALLEYE	1998	Small Fingerling	1.7	8850
WALLEYE	1997	Small Fingerling	2.7	11000
WALLEYE	1996	Small Fingerling	1.6	10277
MUSKELLUNGE	1996	Large Fingerling	10.9	250
WALLEYE	1994	Small Fingerling	3.1	11150
WALLEYE	1991	Small Fingerling	3.0	10192
WALLEYE	1990	Small Fingerling	3.0	10500
WALLEYE	1988	Small Fingerling	4.0	10000
WALLEYE	1986	Small Fingerling	3.0	10000
WALLEYE	1984	Small Fingerling	3.0	10000
WALLEYE	1982	Small Fingerling	3.0	10000
WALLEYE	1972	Large Fingerling	10.0	2000

Mean Length (inches) at Age

Age	Bluegill		Black Crappie		Largemouth Bass
	M	F	M	F	Both Sexes
1	-	-	-	-	-
2	4.6	4.4	6.0	6.1	8.2
3	6.3	6.0	8.2	8.2	11.7
4	7.8	7.6	9.5	8.9	14.2
5	7.7	8.2	10.1	10.2	14.2
6	9.2	8.6	-	11.0	14.1
7	9.1	9.1	-	-	-

Management Options

Northern Pike

- Management Objective: *Maintain fyke net size structure metric (PSD21) at 40-60% and maintain relative abundance metrics.*



Largemouth Bass

- Management Objective: *Maintain current fyke-net and electrofishing size structure and relative abundance metrics.*

Walleye

- Management Objective: *Maintain total abundance at 2 per acre.*
- We were unable to get an accurate population estimate due to water temperatures. Historically White Clay lake has been a stocked walleye fishery with a population around 2 per acre.

Panfish

- Bluegill and black crappie size structure metrics were found at optimal levels. Relative abundance metrics were at moderate levels.
- Management Action: White Clay lake has been included in the experimental panfish regulation to limit harvest. The panfish regulation in place is 25 panfish may be kept, but only 10 of any one species.
- Develop sampling method to better assess yellow perch populations. Fishing reports suggest there is a good population. Due to sampling gear limitations, perch population metrics are difficult to derive.



Other Management Objectives

- White Clay Lake is on a 4 year sampling rotation with the next survey scheduled for 2020. With the current panfish regulation in place it will be important to re-survey the panfish population to evaluate the effects of the regulation.
- Meet with lake association, sportsman's club, and other interested citizens to discuss latest survey results.